

P19101.P01

UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.

P19101

Total Pages

Inventor(s) or Application Identifier
Toru CHIBATitle: A LENS MOLDING DIE AND A PRODUCING
METHOD THEREFOR

ADDRESS TO:

Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

APPLICATION ELEMENTS

ACCOMPANYING APPLICATION PARTS

1. ☒ Fee Transmittal Form
2. ☒ Specification [Total Pages 19]
(preferred arrangement set forth below)
 - Descriptive title of the Invention
 - Cross References to Related Applications
 - Statement Regarding Fed sponsored R & D
 - Reference to Microfiche Appendix
 - Background of the Invention
 - Brief Summary of the Invention
 - Brief Description of the Drawings (if filed)
 - Detailed Description
 - Claim(s)
 - Abstract of the Disclosure
3. ☒ Drawing(s) (35 USC 113) [Total Sheets 2]
4. ☒ Oath or Declaration [Total Pages 3]
 - a. ☒ Newly executed (original or copy) ☐ Unexecuted
 - b. ☐ Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 18 completed)
[Note Box 5 below]
 - i. ☐ DELETION OF INVENTOR(S)
Signed statement attached deleting inventor(s)
named in the prior application, see 37 CFR 1.63(d)(2)
and 1.33(b).
5. ☐ Incorporation By Reference (useable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy
of the oath or declaration is supplied under Box 4b, is considered
as being part of the disclosure of the accompanying application
and is hereby incorporated by reference therein.
6. ☐ Microfiche Computer Program (Appendix)
7. Nucleotide and/or Amino Acid Sequence Submission
(if applicable, all necessary)
 - a. ☐ Computer Readable Copy
 - b. ☐ Paper Copy (identical to computer copy)
 - c. ☐ Statement verifying identity of above copies

8. ☒ Assignment Papers (cover sheet & document(s))
9. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
10. ☐ English Translation Document (if applicable)
11. ☐ Information Disclosure ☐ Copies of IDS Citations
Statement (IDS)/PTO-1449
12. ☐ Preliminary Amendment
13. ☒ Return Receipt Postcard (MPEP 503)
(Should be specifically itemized)
14. ☐ Small Entity ☐ Statement filed in prior application,
Statement(s) Status still proper and desired
15. ☐ The prior application is assigned of record to _____
16. ☐ Foreign priority claimed
 - a. ☐ Claim of Priority
 - b. ☐ Certified Copy of Priority Document(s)
17. ☒ Other: Cover Letter Regarding Executed Application

18. If a **CONTINUING APPLICATION**, check appropriate box and supply the requisite information:
☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior Application No. _____/_____, filed _____.
19. ☐ Amend the specification by inserting before the first line the sentence:

This application is a ___ continuation-in-part, ___ continuation, ___ division, of Application No. _____/_____, filed _____.

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Date

Leslie J. Papner *Reg. No. 33329*
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Typed or Printed Name

P19101.A01

PATENT APPLICATION
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Toru CHIBA

Applications Branch

Appln. No.: Not yet assigned

Filed: Concurrently herewith

For: A LENS MOLDING DIE AND A PRODUCING METHOD THEREFOR

COVER LETTER REGARDING EXECUTED APPLICATION

Commissioner of Patents and Trademarks
Washington, D.C. 20231

Sir:

The undersigned points out that the executed application being filed herewith includes pages 1 - 3 of the executed declaration which were forwarded to the undersigned by facsimile by Applicant's Japanese representative on May 19, 2000, and pages 1 - 19 of the specification (with Figures 1 - 5) which were earlier forwarded to the undersigned by facsimile by Applicant's Japanese representative on May 18, 2000. Further, the undersigned has been advised by the Japanese representative that the inventor has reviewed the identical application before executing the declaration.

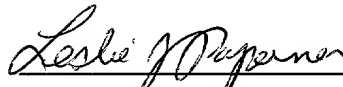
Accordingly, Applicant respectfully submits that the present application is properly executed and should be considered as filed in executed form. However, if the U.S. Patent and Trademark Office determines that the present application is not properly executed,

P19101.A01

Applicant respectfully requests that the present application be treated as an unexecuted application under 37 C.F.R. 1.53(f).

Should there be any questions regarding this paper, please contact the undersigned at the below listed number.

Respectfully submitted,
Toru CHIBA

 Reg. No. 33,329
Bruce H. Bernstein
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May 19, 2000
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SPECIFICATION

Title of the Invention

5

A Lens Molding Die and A Producing Method therefor

Background of the Invention

10 The present invention relates to a lens molding die and a producing method therefor.

 It has been known to produce a lens such as a plastic lens by injection-molding of a resin material. In this way of production, required are a pair of molding dies
15 made of metal or glass and a spacer to be arranged between the dies to form a molding space therebetween. The one surface of respective lens molding die is formed to have a predetermined shape corresponding to that of the respective surface of a lens to be produced. A through-hole for
20 injecting a resin material into the molding space is formed on a spacer.

 In the lens fabricating process with the above explained items, a pair of lens molding dies are disposed with the lens forming surfaces thereof opposing to each
25 other and securely contacted, by means of clamping or the

like, with placing a spacer therebetween to form a closed space corresponding to the shape of a lens to be produced.

Then, lens material is injected into the closed space through the though-hole of the spacer, and energy is
5 applied to the lens material in the closed space externally, by means of heat, ultra-violet rays or the like, to harden it. Thereafter, the hardened material, i.e., the produced lens is taken out of the molding dies by disassembling them. The molding dies and the spacer are re-used after washing,
10 smoothening and so on.

In accordance with the above explained conventional method for producing a lens, a pair of lens molding dies are occupied for producing one lens until the lens material therein is hardened, so that a large number of molding die
15 pairs must be prepared in order to carry out a mass-production with the above method. However, it costs much to produce a molding die of metal or glass having a molding surface of a precise shape.

Further, as it is necessary for re-using them to
20 take the steps of washing, smoothening and so on, the molding surfaces of the dies are more or less mechanically damaged and/or destroyed while repeating these steps, which causes shortening the life time of the dies.

Accordingly, the cost for producing lenses increases
25 due to the high cost and the short life time of the molding

dies, resulting in high prices of the produced lenses.

In the meantime, aspherical lens have recently been widely employed and it has been desired to carry out mass-production for aspherical lenses which are of complex shapes.

- 5 In order to produce aspherical lenses, the molding surface of a die must be processed to be of aspherical shape, which requires, however, expensive processing machine, high processing technique and long processing time. Thus, the lens molding dies therefor and the resulting lens products
10 become particularly expensive.

Summary of the invention

- It is therefore an object of the present invention
15 to provide an improved lens molding die capable of being produced at relatively low cost and in relatively short time.

For the above purpose, in accordance with the present invention, there is provided a lens molding die which comprises:

- 20 a base member made of a hard material and having one surface of a predetermined shape; and
a resin-molded surface layer formed on the one surface of the base member and having a surface shape corresponding to a predetermined shape of one surface of a
25 lens to be produced.

In the embodiments, the predetermined shape of the one surface of the base member is spherical while the surface shape of the resin-molded surface layer is aspheric.

The resin-molded surface layer is to be made of a material which is inactive with a material to be molded by the lens molding die. The surface layer may be made of a thermosetting resin material or a ultraviolet-curable resin material.

When producing a lens molding die, a base member is made of a hard material and provided with one surface of a predetermined shape, and a resin-made surface layer is formed on the one surface of the base member to have a surface shape corresponding to a predetermined shape of one surface of a lens to be produced.

The resin-made surface layer is to be formed by disposing a transfer die and a base member with facing the transfer surface of the transfer die to the one surface of the base member to form a predetermined space therebetween, introducing a resin-material into the predetermined space, and hardening the introduced resin-material.

In case of a ultraviolet-curable resin material, a base member is preferably made of a transparent material and the ultraviolet rays are projected to the layer through the base member. Alternatively, the transfer die may be made of a transparent material and the ultraviolet rays are

projected to the layer through the transfer die.

BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a sectional view showing a lens molding die and a device for producing it;

 Fig. 2 is a sectional view explaining how to produce a lens molding die;

 Figs. 3 and 4 are sectional views explaining how
10 to produce a lens with a pair of lens molding dies; and

 Fig. 5 is a sectional view showing a lens produced.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

15

 As shown in Fig. 1, a lens molding die 1 embodying the invention comprises a base member 11 of a substantially disc-plate shape having a spherical surface, and a molded layer 12. Fig. 1 also shows a device P for producing the die
20 1, which comprises an upper cylindrical holder 6 capable of securely holding the base member 11 therein, a transfer die 4 of a substantially columnar shape having a transfer surface 4a at one end surface thereof, a lower cylindrical holder 3 arranged to be opposed to the upper cylindrical
25 holder 6 and capable of securely holding the transfer die 4

therein, and a positioning member 7 disposed between the opposing surfaces of the upper and lower holders 6 and 3.

The base member 11 of the lens molding die 1 is made of glass having the concave upper surface. The lower
5 surface of the base member 11 is of a convex shape having the same curvature radius as that of the upper surface. The molded layer 12 of the lens molding die 1 is formed by hardening the resin material to form a lens molding surface 12a as later described.

10 The transfer die 4 of the producing device P is made of a hard metal material, and the transfer surface 4a thereof is protruded to be of an aspherical-shape. The diameter of the transfer die 4 is substantially same as that of the base member 11 of the lens molding die 1. The
15 transfer surface 4a of the transfer die 4 is formed by machining operation and finished by polishing to have a predetermined shape which is to be transferred onto the lens molding surface 12a.

The upper and lower holders 6 and 3 are supported by
20 a supporting structure, not shown, to be movable in the direction toward and away from each other. The base member 11 of the lens molding die 1 is fitted into the lower holder 3 through the upper end opening thereof, while the transfer die 4 is fitted into the upper holder 6 through the lower
25 end opening thereof.

The positioning member 7 is of a ring shape, the inner diameter of which is larger than those of the holders 3 and 6 while the outer diameter thereof is smaller than those of the holders 3 and 6.

5 Hereinafter, a method for producing the lens molding die 1 by employing the producing device P will be explained.

First, the lower holder 3 is moved by operating a supporting mechanism, not shown, to the position where the lower holder 3 is positioned away from the upper holder 6.

10 Under this state, the base member 11 is fitted into the lower holder 3 with the concave surface thereof facing up, while the transfer die 4 is fitted into the upper holder 3 with the transfer surface 4a facing down.

Next, the positioning member 7 is placed on the
15 upper end surface of the lower holder 3 by operating a supporting structure, not shown, and further a predetermined amount of a molding material is dripped onto the central area of the concave surface of the base member 11.

Then, the lower holder 3 is moved upwardly to
20 approach toward the upper holder 6 by a supporting structure, not shown, such that the positioning member 7 is sandwiched and securely held between the lower end surface of the upper holder 6 and the upper end surface of the lower holder 3. Thereafter, the molding material between the upper surface
25 of the base member 1 and the lower surface of the transfer

die 4 is heated by a heater, not shown, or subject to ultraviolet rays depending upon the physical properties of the material, to harden the molding material for forming the molded layer 12 on the upper surface of the base member 11.

5 Then, the molded layer 12 and the base member 11 are cooled down nearly to a room temperature in case of thermosetting material and the produced lens molding die 1 is taken out after moving the lower holder 3 to be away from the upper holder 6 and removing the positioning member 7.

10 Thus obtained molding die 1 is to be used as one of a pair of opposing dies for producing a lens. Other one of the pair of opposing dies is to be produced as illustrated in Fig. 2. That is, although the concave molding surface is formed on the lens molding die 1, a lens molding die 2 is to
15 be formed to have a convex molding surface.

 Accordingly, as shown in Fig. 2, a base member 21 of the lens molding die 2 is provided with a convex surface while a transfer die 5 is provided with a concave surface, and the lens molding die 2 is disposed, with the convex
20 surface thereof facing down, above the transfer die 5 to form a molded layer 22 having a convex surface. The lens molding die 2 is produced in a similar manner as the lens molding die 1 by employing the producing device P explained above.

25 A pair of molding dies 1 and 2 thus produced are

used for producing a lens L shown in Fig. 5 in such a way as illustrated in Figs. 3 and 4.

First, as shown in Fig. 3, the lens molding dies 1 and 2 are disposed to be opposed to each other via a sealing spacer 8 which faces the concave surface of the former to the convex surface of the latter. The sealing spacer 8 is ring-shaped, the outer diameter of which is larger than the outer diameters of the molding dies 1 and 2 while the inner diameter is smaller. The upper and lower edge portions of the sealing spacer 8 are provided with the inner stepped portions G for receiving the edge portions of the molding dies 1 and 2. That is, the inner diameters of the upper and lower stepped portions of the sealing spacer 8 are same as the outer diameters of the molding dies 1 and 2. By forcing the molding dies 1 and 2 to be securely seated on the stepped portions G of the sealing spacer 8 by means of a tape or a clip, not shown, an air-tight closed space H is formed by the inner surfaces of the sealing spacer 8 and the molding dies 1 and 2. A through-hole 8a for allowing a lens material to be introduced into the closed space H by means of a hypodermic syringe is formed on the sealing spacer 8, not shown, or the like.

Fig. 4 shows the lens material F filled in the closed space H. The lens material F filled in the closed space H is then cured by being subject to heat generated by

a heater, not shown, or subject to ultraviolet ray projected by a ultraviolet lamp, not shown, depending upon the physical properties of the lens material F.

In the meantime, the material for the molded layers 12 and 22 are to be selected from the materials which are inactive with the lens material F, so that the molded layers 12 and 22 can keep their shapes even during curing treatments without being reacted with the lens molding material F.

Upon elapse of a predetermined time after completion of curing treatment, the obtained lens L as shown in Fig. 5 is taken out of the producing device P. The obtained lens L is provided with the lens surfaces L1 and L2 of the predetermined shapes transferred from the lens molding surfaces 12a and 22a of the lens molding dies 1 and 2.

[Example 1]

In this example, the base member made of glass and having the concave upper surface of the 180 mm curvature radius and the 65 mm length diameter is employed for one of a pair of lens molding dies, while the base member of 80 mm curvature radius and the 65 mm length diameter is employed for another lens molding die. As the material for forming the molded layer on the base member, the mixture of the resin material "1300T" and the curing agent "cat", both of

which are the products of "Shinetsu Silicone (Japanese company)" is employed and heated for 3 hours at the temperature of 60°C to have the cured layer of 0.5 mm thickness at the center thereof.

- 5 Then, the mixture of the following double-fluid-type epoxides is employed as the lens material F:

Principal agent (2/3) : "EPICOAT 801P (Product of Yuka Shell Epoxy Co. Ltd)"

- 10 Curing Agent (1/3) : "EPOMATE B002 (Product of Yuka Shell Epoxy Co. Ltd)"

- The lens material F filled in the closed space H is heated by a heater, not shown, at the temperature of 100°C for 4 hours to be thermo-set. Upon elapse of a predetermined time for cooling down nearly to a room temperature after
15 completion of thermosetting treatment, the lens L having the lens surface of a target shape is obtained.

[Example 2]

- 20 In this example, the material which is different from that employed in Example 1 is used for forming the molded layer on the base member. That is, the mixture of Urethane Oligomer (3/7 weight), Trimethylolpropane Triacrylate Modified Propyleneoxide (TPMA, 4/7 weight) made
25 by Nippon Kayaku Co., Ltd, and "IRUGACURE 651

(polymerization initiator, 1%) is employed, and cured by
subjecting to the ultraviolet rays of 400W for 5 minutes to
form the cured layer of 0.2 mm thickness at the center
thereof. With employing the obtained lens molding dies, the
5 lens L having the lens surface of a target shape is obtained
as in Example 1.

[Example 3]

In this example, instead of Trimethylolpropane
10 Triacrylate Modified Propyleneoxide employed in Example 2,
Trimethylolepropane Diacrylate Modified Neopenthylglycol
made by Nippon Kayaku Co., Ltd. is employed. With this, the
lens L having the lens surface of a target shape is obtained
as in Example 2.

15

In accordance with the above embodiment, the base
member of the lens molding die can be produced by relatively
easy machining processing as the surface thereof is of a
spherical shape, and further the final lens molding surface
20 of the lens molding die can be easily produced even if it is
for a complex lens surface such as an aspheric surface since
the final lens molding surface can be obtained by molding a
resin material to form the molded layer on the base member.
Accordingly, even if the lens surfaces to be obtained are
25 complex ones such as aspheric surfaces, once a pair of

transfer dies having transfer surfaces of predetermined shapes corresponding to the lens surfaces to be obtained are made of a hard metal material or the like, a plurality of pairs of the lens molding dies can be easily produced in
5 relatively short time and at relatively low cost.

Further, in case the lens molding surface of the lens molding die is damaged due to repeated use thereof, it can be easily repaired by re-forming the molded layer of the lens molding die with the transfer dies, resulting in
10 extension of life of the lens molding die at fairly low cost.

Moreover, by employing a ultraviolet-curable material, the time required for producing the molded layer, and therefore the lens molding die can be shortened.

It should be noted that the present disclosure
15 relates to subject matters contained in Japanese Patent Application No. Hei 11-141215 filed on May 21, 1999, which is expressly incorporated herein by reference in its entirety.

What is claimed is:

1. A lens molding die which comprises:

a base member made of a hard material and having one
5 surface of a predetermined shape; and

a resin-molded surface layer formed on said one
surface of the base member and having a surface shape
corresponding to a predetermined shape of one surface of a
lens to be produced.

10

2. The lens molding die according to claim 1, wherein
the predetermined shape of said one surface of the base
member is spherical while the surface shape of the resin-
molded surface layer is aspheric.

15

3. The lens molding die according to claim 1, wherein
said resin-molded surface layer is inactive with a material
to be molded by said lens molding die.

20

4. The lens molding die according to claim 3, wherein
said surface layer is made of a thermosetting resin material.

5. The lens molding die according to claim 3, wherein
said surface layer is made of a ultraviolet-curable resin

material.

6. A method for producing a lens molding die, which comprises:

5 preparing a base member made of a hard material and having one surface of a predetermined shape;

forming a resin-made surface layer on said one surface of the base member to have a surface shape corresponding to a predetermined shape of one surface of a
10 lens to be produced.

7. The method for producing a lens molding die according to claim 6, wherein the predetermined shape of said one surface of the base member is spherical while the
15 surface shape of the resin-molded surface layer is aspherical.

8. The method for producing a lens molding die according to claim 6, wherein said resin-molded surface
20 layer is formed by a material which is inactive with a material to be molded by said lens molding die.

9. The method for producing a lens molding die according to 8, wherein said material of the surface layer
25 is a thermosetting resin material, and wherein said surface

layer is formed by heating said material.

10. The method for producing a lens molding die according to 8, wherein said material of the surface layer is a ultraviolet-curable resin material, and said surface layer is formed by projecting ultraviolet rays thereto.

11. A method for producing a lens molding die, which comprises:

- 10 preparing a base member made of a hard material and having one surface of a predetermined shape;
- preparing a transfer die made of a hard material and having a transfer surface of another predetermined shape;
- disposing said transfer die and said base member by facing said transfer surface of the transfer die to said one surface of the base member to form a predetermined space therebetween;
- 15 introducing a resin-material into said predetermined space; and
- 20 hardening said resin-material to form a molded resin layer on said one surface of the base member, said molding die comprising said base member and said molded resin layer.

12. The method for producing a lens molding die according to claim 11, wherein the predetermined shape of

25

said one surface of the base member is spherical while said another predetermined shape of the transfer surface is aspherical.

5 13. The method for producing a lens molding die according to claim 12, wherein said molded resin layer is formed by a material which is inactive with a material to be molded by said lens molding die.

10 14. The method for producing a lens molding die according to 13, wherein said material of the molded resin layer is a thermosetting resin material, and wherein said molded resin layer is formed by heating said material.

15 15. The method for producing a lens molding die according to 13, wherein said material of the molded resin layer is a ultraviolet-curable resin material, and said molded resin layer is formed by projecting ultraviolet rays thereto.

20

16. The method for producing a lens molding die according to claim 15, wherein said base member is made of a transparent material and said ultraviolet rays are projected to said layer through said base member.

25

17. The method for producing a lens molding die according to claim 15, wherein said transfer die is made of a transparent material and said ultraviolet rays are projected to said layer through said transfer die.

5

18. The method for producing a lens according to claim 12, which comprises:

preparing a first lens molding die having the molded resin surface of a first predetermined shape corresponding to one surface shape of the lens to be produced;

10

preparing a second lens molding die having the molded resin surface of a second predetermined shape corresponding to another surface shape of the lens to be produced;

15

disposing said first and second lens molding dies with facing the molded resin layers thereof toward each other to form a predetermined space therebetween;

introducing a material into said predetermined space; and

20

hardening said material to form the lens having said one and another surfaces.

19. A lens produced by said method for producing a lens defined in claim 18.

25

Abstract of the Disclosure

A lens molding die for producing a lens, which
5 comprises a base member made of a hard material and having
one surface of a predetermined shape; and a resin-molded
layer formed on the one surface of the base member and
having a surface shape corresponding to a predetemined shape
of a lens to be molded. The resin-molded surface is to be
10 made of a resin material which is inactive with a material
which is to be molded by the lens molding die. The resin-
molded layer is formed by introducing the material into the
space formed between the one surface of the base member and
a transfer surface formed on a transfer die correspondingly
15 to the surface of a lens to be produced to be cured by heat
or ultraviolet rays.

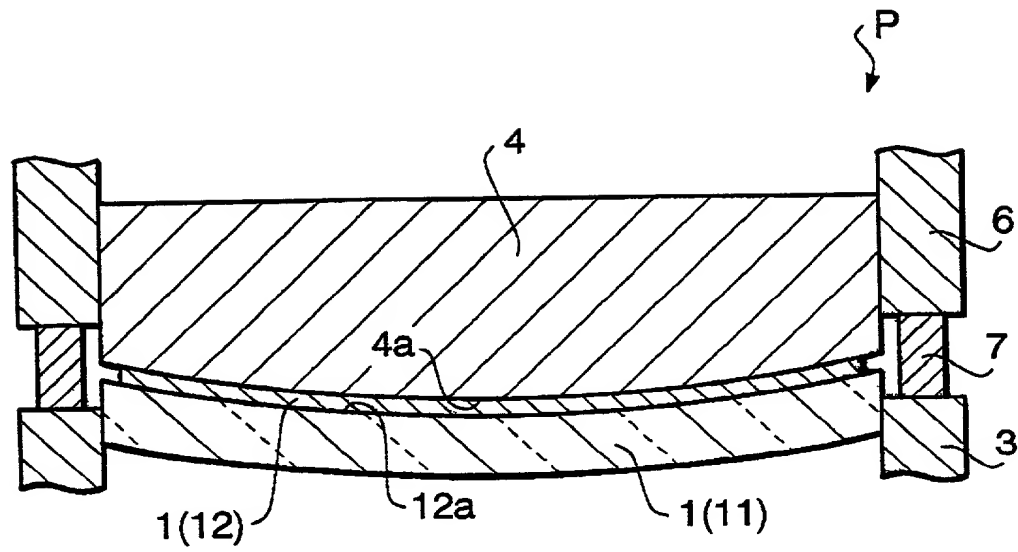


FIG. 1

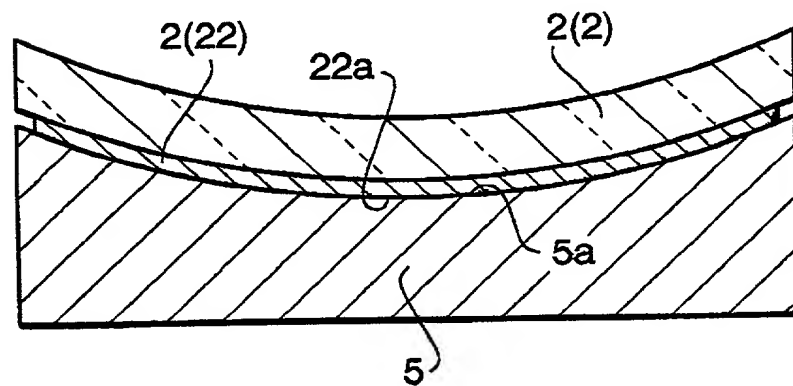


FIG. 2

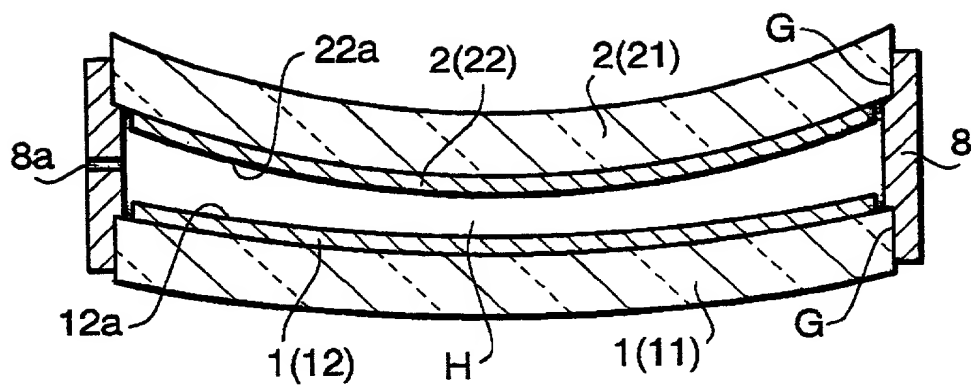


FIG. 3

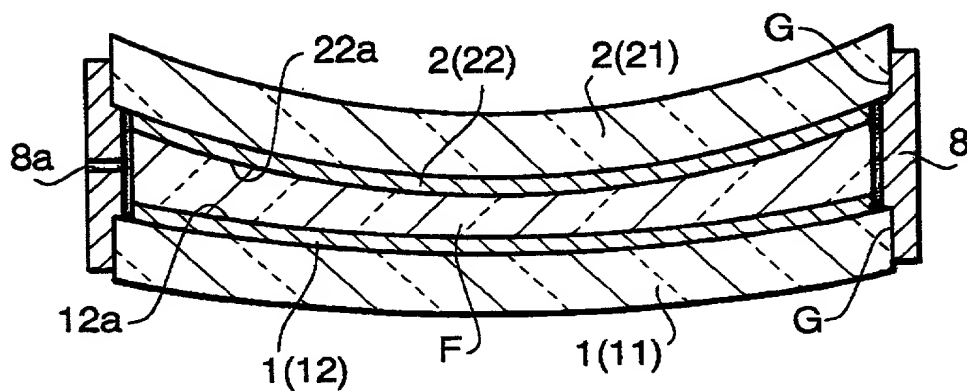


FIG. 4

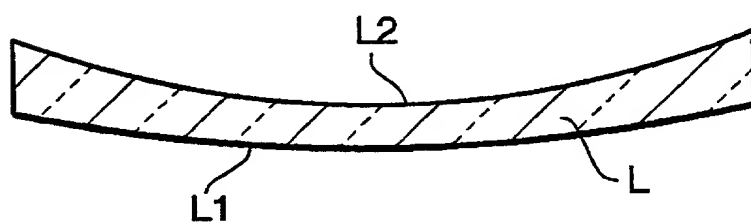


FIG. 5

006750" 53242560

77 00 0111 0111
(AK-00042US SM)

Declaration and Power of Attorney For Utility or Design Patent Application

特許出願宣言書

Japanese Language Declaration

私は、下欄に氏名を記載した発明者として、以下のとおり
宣誓する：

私の住所、郵便の宛先および国籍は、下欄に氏名に続いて記載したとおり
であり、

名称の発明に関し、請求の範囲に記載した特許を求める主題の本来の、
最初にして唯一の発明者である(一人の氏名のみが下欄に記載されている
場合)か、もしくは本来の、最初にして共同の発明者である(複数の氏名が
下欄に記載されている場合)と信じ、

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated
below next to my name.

I believe I am the original, first and sole inventor (if only one name is
listed below) or an original, first and joint inventor (if plural names
are listed below) of the subject matter which is claimed and for
which a patent is sought on the invention entitled

A Lens Molding Die and A Producing Method
therefor

上記発明の明細書(下記の欄でX印がついていない場合は、
本書に添付)は、

the specification of which is attached hereto unless the following
box is checked:

____年____月____日に提出され、
米国出願番号____とし、
(該当する場合)____年____月____日に訂正されました。又は、
特許協定条約国際出願番号____とし、
(該当する場合)____年____月____日に訂正されました。

☐ was filed on _____ as
United States Application Number _____
and was amended on _____ (if applicable) or,
PCT International Application Number _____
and was amended on _____ (if applicable).

私は、前記のとおり補正した請求の範囲を含む前記明細書の内容を検討
し、理解したことを陳述する。

I hereby state that I have reviewed and understand the contents
of the above identified specification, including the claims, as
amended by any amendment referred to above.

私は、連邦規則法典第37編第1条第56項に定義されるとおり、特許資
格の有無について重要な情報を開示すべき義務があることを認めます。

I acknowledge the duty to disclose information which is material to
patentability as defined in Title 37, Code of Federal Regulations,
§1.56.

私は合衆国法典第35部第119条(a-d)項又は第365条(b)項に基づく、下
記の外国特許出願又は発明者証出願、或いは第365条(a)項に基づく、少な
くとも米国以外の1ヶ国を指名したPCT国際出願の外国優先権を主張し、
更に優先権の主張に係わる基礎出願の出願日前の出願日を有する外国特許
出願、又は発明者証出願或いはPCT国際出願を以下に“なし”の箱に印を
つけることにより明記する：

I hereby claim foreign priority under Title 35, United States Code
§119(a-d) or §365(b) of any foreign application(s) for patent or
inventor's certificate, or §365(a) of any PCT international application
which designated at least one country other than the United States,
listed below. I have also identified below, by checking the "No"
box, any foreign application for patent or inventor's certificate, or of
any PCT international application having a filing date before that of
the application on which priority is claimed:

Prior foreign applications
先の外国出願

HET 11-141215

(Number)
(番号)

JAPAN

(Country)
(国名)

21/May/1999

(Day/Month/Year Filed)
(出願の年月日)

(Number)
(番号)

(Country)
(国名)

(Day/Month/Year Filed)
(出願の年月日)

Priority claimed

優先権の主張

☒ Yes ☐ No

あり なし

☐ Yes ☐ No

あり なし

☐ その他の外国特許出願番号は別紙の追補優先権欄にて記載する。

☐ Additional foreign application numbers are listed on a
supplemental priority sheet attached hereto.

Japanese Language Utility or Design Patent Application Declaration

私は、合衆国法典第35部第119条(e)項に基づく、下記の合衆国仮特許出願の利益を主張する。

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

(Application No.)
(出願番号)

(Day/Month/Year Filed)
出願の年月日

(Application No.)
(出願番号)

(Day/Month/Year Filed)
出願の年月日

(Application No.)
(出願番号)

(Day/Month/Year Filed)
出願の年月日

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I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s), or §365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

(Application No.)
(出願番号)

(Day/Month/Year Filed)
(出願の年月日)

(状況)
(特許済み、係属中 放棄済み)

(Status)
(patented, pending, abandoned)

(Application No.)
(出願番号)

(Day/Month/Year Filed)
(出願の年月日)

(状況)
(特許済み、係属中 放棄済み)

(Status)
(patented, pending, abandoned)

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Japanese Language Utility or Design Patent Application Declaration

委任状： 私は、下記発明者として、下記に明記された顧客番号を伴う以下の弁護士又は、代理人をここに選任し、本願の手続きを遂行すること並びにこれに関する一切の行為を特許商標庁に対して行うことを委任する。そして全ての通信はこの顧客番号宛に発送される。

顧客番号 7055

現在選任された弁護士は下記の通りである。

Neil F. Greenblum
Bruce H. Bernstein
James L. Rowland
Arnold Turk

POWER OF ATTORNEY: As a named inventor, I hereby appoint the attorney(s) and/or agent(s) associated with the Customer Number provided below to prosecute this application and transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to that Customer Number:

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第2の共同発明者の氏名 (該当する場合)	Full name of second joint inventor, if any	
同第2共同発明者の署名	日付	Second inventor's signature Date
住所	Residence	
国籍	Citizenship	
郵便の宛先	Post Office Address	

(第六またはそれ以降の共同発明者に対しても同様の情報および署名を提供すること。)

(Supply similar information and signature for third and subsequent joint inventors.)